

Musical Systems of Ancient Tamils

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We are to scan through a long period of 2000 years or more to get at the sources of Tamil Literature and fine arts such as music, dance, drama, etc. It is a real task to measure the ancient glories and great traditions of Tamil culture and civilization with the present yard-stick of diminished knowledge and meagre resources. Enormous changes have taken place over the long period but still there has been a continuity of the traditions. History of music in the West shows that they have given up the older traditions and switched over to an entirely new system of music from the 15th century onwards.

In the East, particularly in India we may say that the older tradition has been preserved without giving way to any new musical system. The melodic system of Indian Music, set in the varied structures of ragas seem to have come down intact at least in the practical side of the art. It is really marvellous that the Indian raga-system with semi, quarter tones and still more minute microtones has lived through this lengthy period of several hundred years, mostly by traditional methods of singing. The living ragas with all the subtle notes and scales incorporated in them and their technique of structure and form, are the only clues from which we could pursue the track of the original sources.

Greek and Tamil Musical Systems

The earlier musical system of the West especially that of the Greeks, was a highly evolved melodic system which was in practice even before the Christian era. The difficulty in investigating the early Greek Music system is its lack of practical evidences ; later developments in European music completely lost sight of the earlier culture, while absorbing the poly-phonic music. However, so far as the theoretical side of Greek music is concerned, it is heartening that plenty of written records are available on the subject, though they are conflicting and contrary to each other. As modern musicologists of the West have come far away from melodic pattern of music, they find it impossible to unfold the closed quarters of the realm of modes and scales. The difficulty for the Indian musicologist is that Indian music is now confined to a limited range of mono-tonic music with utmost capacity of 2 octave span. The theoretical side of Indian music is mutilated by the differing commentaries of several theorists of the medieval and later periods. During this time, the

great science of music was on the decline. The result was confusion in establishing the basic science and grammar that govern the raga structure of Indian music.

We understand from early Tamil literature that the practice of modulation was in vogue in those times, as is still in vogue with the Western music ; of course the Western type of modulation is different from the shift-model system of the earlier periods ; while changing the key, there occur flats and sharps according to the movements of the semi-tones. Western Music adheres mainly to two modes: major and minor ; hence the changed mode (by way of modulation) is again made into a major or minor key by flattening or sharpening the notes that were changed in the process of modulation. In earlier music the new modes acquired by modulation were used as they occurred. This will be explained while the respective modes are given in the circle of modulation. In my opinion a comparative study of the Western Music systems and the earlier melodic traditions may help us more in getting at the fundamental principles of the Raga Structure of Indian Music rather than the present practices prevailing in Indian Music.

Systems of Technique in Tamil Music

The Tamil Music system provides for at least four systems of technique of performance to suit the taste and capacity of the people, belonging to the different grades of intellect and aesthetics. The common practice of singing the twelve plain semi-tones of a gamut as well as the much evolved systems of singing 24, 48, and 96 microtones in a gamut was in vogue. In Indian music today we find not only the full-tone, and semitone usages but also varied types of microtonal embellishments. Full-tone music (avoiding the semi-tone) is still present in the pentatonic form of ragas like *Mōkaṇam*, *Matyamāvati* etc. The scales of such ragas are as follows :—

	<i>Carnatic Name</i>	<i>Hindustani Name</i>
1. C D E G A C' :	<i>Mōkaṇam</i>	Bhup
2. C Eb F Ab Bb C' :	<i>Hiṇṭōla</i>	Malkosh
3. C D F G A C' :	<i>Sutta Sāvēri</i>	Durga
4. C Eb F G Bb C' :	<i>Sutta Taṇyāci</i>	
5. C D F G Bb C' :	<i>Matyamāvati</i>	

These ragas are very popular and beautiful and are suited for elaborate singing and imagination. It is a fact that they command a prominent place in stage-performances. This observation is just to show, even pentatonic modes considered to be of primitive nature, secures a place in the raga systems of Indian Music in a much refined form.

Tamil music starts its theme with seven notes *ēḷicai* of an octave consisting of 5 tones and 2 semi-tones. The diatonic scales were the starting point of the musical theories of ancient Tamils. Four systems of singing technique had been advocated in the musical works of early Tamils.

Āyañcaturaṇ tirikōṇam Vaṭṭamenap
*Pāya nāṅkum pālaiyākum*¹

There were four systems called *Āyappālai*, *Vaṭṭappālai*, *Tirikōṇap-pālai* and *Caturappālai*. These systems perhaps represented the diatonic, chromatic, enharmonic nature of modes respectively. Of course Indian music, specially of the South, abounds in smaller fractions than the quarter tones. It does not mean that a total number of 96 micro-tones could be sung in demonstration. We find such minute notes incorporated in the raga-forms of South India to the astonishment of Western musicians and musicologists. In fact the provocation to analyse these micro-tones is not different from finding the exact location of these, undoubtedly still living musical particles. The survival of these micro-tonal ragas in spite of the loss of their supporting theory, establishes their innate weight and value.

It is universal that the basic components of music are the seven notes *ēḷicai*. The two fixed notes namely the tonic and the dominant, along with the five other modifiable notes as sharp and flat constitute an octave of twelve semi-tones. These notes were arrived at by the calculation of the cycle of fifths.

*Vaṇṇap paṭṭatai yāl mēl Vaittāṅku*²

Vaṇṇam means the colour or tone ; *paṭṭatai* means the dominant ; it was considered the basic yardstick with which to measure the scales. The cycle of fifths gives birth to the seven major tones as well as to the five minor tones. We find that this musical system based on the projection of pure fifths was called pythagorean intonation in Greek music.

G. Revesz says, 'It is a familiar fact that our musical system, particularly the major modes, can be constructed in another manner than by just intonation. The foundation for this is one definite interval, namely the perfect fifth, which is second to the octave as regards degree of consonance and fusion. Since we are almost as sensitive to the purity of the fifth as to that of the octave, and since the perfect fifth is an especially characteristic interval, no objection can be raised to its use as a unit of measurement'.³

The calculation of notes by the cycle of fourths also was in vogue with Tamils.

*Varaṇ muraḥ maruṅkiṇ aintinūm ēlinum*⁴

The traditional method was to calculate by fives and sevens meaning the perfect fourth and dominant respectively. In diatonic order F is the fourth, G is the fifth. But in chromatic order F is given the 5th place in this order ; Db D Eb E F—The tonic note is left out. Similarly G is given the 7th place as Db D Eb E F F G. It is true that much confusion is caused by frequent mingling of these systems namely diatonic, chromatic etc. We have to be very careful about the context to make out the proper meaning. Projection of the notes by the circle of fourths and fifths was called *Pilaiyā Marapu* and *Atirā Marapu* meaning the unerring tradition, and the unswerving tradition.

The twelve semi-tones were calculated in two ways i.e., by fifths above and by fourths below. The following table shows the birth of the twelve semi-tones consisting of seven natural and five modified notes :

By fifths above (as S.R.G.M.P.)

S-P, P-R, R-D, D-G, G-N, N-M, [#]M-[#]Rb
Rb-Db, Db-Gb, Gb-Nb, Nb-M, M-S

The notes obtained by fourths below (as S.N.D.P.)

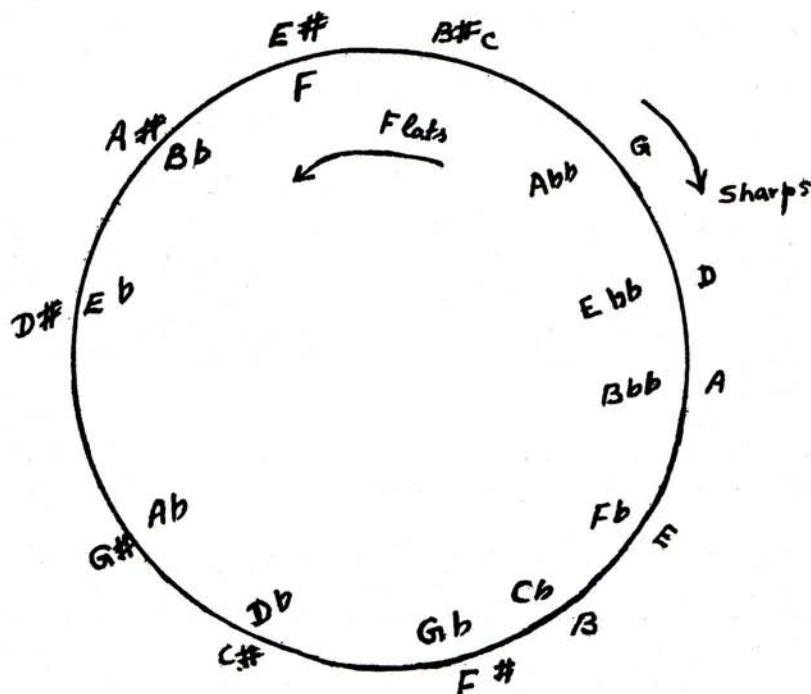
S-P, P-R, R-D, D-G, G-N, N-M, [#]M-[#]Rb,
Rb-Db, Db-Gb, Gb-Nb, Nb-M, M-S

The calculation of the notes by the cycle of fourths and fifths is very important in Western music system also, as it is with the Indian Music.

⁴ The complete circle of sharp and flat keys divided by fifths, is of great importance in the evolution of music. It is a complete system of tonality and harmonic relationships that affords through modulation the possibility of tremendous variety and unity. It is one of the Chief means of building large scale structures. The contrast of different keys also, affords considerable variety of tone colour, especially in the degree that certain instruments and voices are partial to certain keys and less suited to others.⁵

The following example shows the right and left circles of fifths constructing the sharps and flats.

Example



Though the principles of harmonies and resonance allow for the derivation of a large number of basic intervals in the octave, these twelve semi-tones stand above the others for their basic nature and for the readiness of their derivation. Among the four systems of practice in Tamil music, the *Āyappālai* system seems to represent the diatonic nature of the modes. The nature of ragas given under this scheme confirms this view.

The *Āyappālai* system—(the dia-tonic scales).

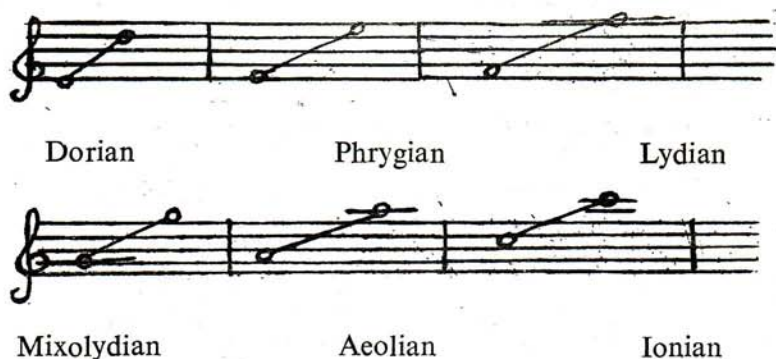
The modes given under this system are as follows :—

<i>Paṇ</i>	<i>Notes</i>
1. <i>Cempālai</i>	.. C D E F G A B
2. <i>Paṭumalaippālai</i>	.. C D E ^b F G A B ^b
3. <i>Cevvalippālai</i>	.. C D ^b E ^b F G A ^b B ^b
4. <i>Arumpālai</i>	.. C D E F [#] G A B
5. <i>Kōṭippālai</i>	.. C D E F G A B ^b
6. <i>Viḷaṇippālai</i>	.. C D E E ^b F G A ^b B ^b
7. <i>Mērcempālai</i>	.. C D ^b E ^b F F [#] A ^b B ^b

There has been lot of controversy over the fixation of the first mode, during the past several centuries starting even from the times of Bharata of *Natya Sastra*. Analysis of the scales by the cycle of fifths shows that the C major was taken as the basic mode for purposes of modulation. All the seven modes given above were obtained by modulation. The first six modes are of diatonic nature. The seventh mode was given up as un-musical scale probably because there occurs the chromatic element which is against the diatonic species. This mode was called as *pāṭar kutavāppan* meaning not suited for singing. We understand that the first six modes alone were in regular practice.

It is surprising that all the six modes corresponding to these were found in the early Greek music, given in the same manner. While speaking about the 'old' or 'church' modes, it is said, 'In music before 1600, a modal system prevailed. The modern system uses two modes (major and minor) and the transposition of these two modes to any one of the twelve half steps; the modal system used six modes and only one or two transpositions. The major was called the Ionian mode; and the minor, the Aeolian. There were in addition the Dorian, Phrygian, Lydian and Mixolydian modes, which (as shown in example below) can be derived by using the white keys of the Piano, starting respectively on D, E, F, and G. These modes are distinguished from the major and minor by certain specific interval differences. The most strikingly different mode is the Phrygian. Unlike any of the other modes, it has half tone between its first and second degrees. The interval structure of the Dorian would be the same as pure minor if the B were flatted. The Lydian and Mixolydian are close to major. By flattening the B the Lydian becomes F major; by sharpening the F, the Mixolydian becomes G major.'⁶

Example



The seventh mode starting from the leading note B had been left out as was the case with Tamil Music. These modes ensure that this system was of purely diatonic nature. Even upto the present day the four modes starting from C, D, E and F are most popular and are in ex-

tensive use in performances showing inexhaustible depth and vastness. The other two modes starting from G and A are substituted by their major derivations namely *Kāmpōti* and *Pairavi*. Raga *Kāmpōti* takes the scales—C D E F G A C for ascent and C Bb A G F E D C for descent. The B natural is used in this raga occasionally and it adds to its beauty. This is in keeping with the Western practice where no scale could be thought of excepting with the leading note. The other mode which springs from the sixth note gives birth to the *Pairavi* Raga in the following scales :— Ascent : C D E B F G A Bb C', Decent : C' Bb Ab G F Eb D C. This derivation is more elegant than its mother scale which takes Ab in the ascent also. These scales are given as melodic patterns all transposed to the tonic of C.

There are many other Main ragas which too command popularity and importance equal to the above fundamental modes but those ragas take more than two semi-tones in an octave. Examples are *Māyamāḷava* *Kauḷa* with scales : (C Db EF G Ab BC) with four semitones,
($\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$)

Pantuvarāḷi (with scales (C Db E F[#] G Ab Bc) with four semitones,
($\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$)

Caṇmukapriyā with scales :—(C D Eb F[#] G A Bb) with three
($\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$)

semi-tones. There are many other ragas with more than two semi-tones but they do not come under the chromatic order. Upto this day the most popular ragas are of dia-tonic and semi-tone interval. In practice, expert musicians employ quarter-tonal expressions in abundance in these ragas themselves. The admixture of these different systems in an evolved artistic rendering is inevitable.

The dia-tonic C major and its modulation over the six other notes are given in the chart below with the equivalent names in Carnatic and Hindustani Music. The modulation is shown in the succession of fifths as C,G,D,A,E, etc. The F that comes a fifth below projects as a mode with one sharp.

Names of the Scales

The key from which the scales starts	Greek	Tamil	Carnatic	Hindustani
C ..	Ionian	<i>Cempālai</i>	<i>Caṅkarāparaṇam</i>	Bilaval
G (with 1 flat)	Mixo-lydian	<i>Koṭippālai</i>	<i>Hari Kāmpōti</i>	Kamoj
D („ 2 flats)	Dorian	<i>Paṭumalaippālai</i>	<i>Karakarapriyā</i>	Kafi
A („ 3 „)	Aeolian	<i>Viḷarippāli</i>	<i>Nāṭṭapairavi</i>	Darbari
E („ 4 „)	Phrygian	<i>Cevvaḷippālai</i>	<i>Tōṭi</i>	Bhairav
B („ 5 „)	..	<i>Mērcempālai</i>
F („ 1 sharp)	Lydian	<i>Arumpālai</i>	<i>Kalyāṇi</i>	Yaman

In the formation of Keys of West and ragas in Indian music the fifth seems to play the most important role. This formula applies both to Western and Eastern Music. The importance of the fifth is very much emphasised in Tamil music system.

'The harmonic series establishes a hierarchy of intervals : the octave as the most "perfect", the fifth the next perfect and so on. Since the octave can be viewed as a duplication, the fifth assumes special importance, for instance in key relationships, as is shown below. The importance of the fifth is reflected in the terminology used. The fifth above a tonic is said to be the dominant and the chord built on the fifth is the dominant chord. In the same way, the chord built on the fifth below the tonic is the Sub-dominant.'⁷

The cycle of fifths was called the *Vaṇṇappaṭṭai* the basic factor of measuring the scales. The strings of the *Yāl* were tuned, based on this principle: *Vaṇṇappaṭṭai Yālmēl vaittu*. And Tamil music proclaims that if this formula is strictly adhered to, the proper type and tradition of music can never be damaged.

The importance of this principle is shown by Prof. David D. Boyden in the construction of key signatures. 'This circle of fifths operates above a given note in sharps and below the note in flats. Beginning with C, the major key of no sharps or flats, one counts a fifth above to reach G, the major key of one sharp ; a fifth above G is D, the major key of two sharps. Again beginning with C, one counts a fifth below to reach F, the major key of one flat ; a fifth below F is B flat, the major key of two flats. Example (below) show all these keys'.⁸

Example

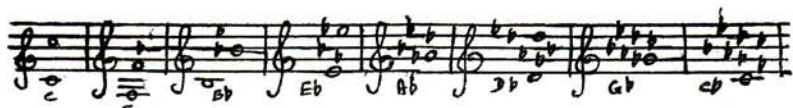
Circle of fifths by Sharps.

Majors.



Circle of fifths by flats.

Majors.



The circle of fifths clockwise and anti-clockwise bring out the keys in a perfect order. This method of calculation of fifths above and below the C tonic was very much in vogue in Tamil music. The use of modula-

tion is absolutely different in the two systems namely the Western and Eastern in the modern music. In the former system the modulated key is maintained in the same pitch and the flats and sharps that occur during the change of key are made into natural ones by adjusting a semi-tone above or below. Whereas in Indian music the scale that projected forth by modulation is brought back to the original key i.e., a transposition to the tonic is effected retaining the flats and sharps that occurred during the change of key.

Thus we could analyse the modes in the following manner :—

- C. Major — all natural notes.
- G. Major — there occur one flat—Hence Key of G. Major has got one sharp.
- D. Major — This mode has got two flats ; therefore D major has 2 sharps.

Likewise the major and minor keys are maintaining the same notes by taking the flats and sharps thus eliminating the change in their intervals. The ragas of Indian music transpose all the keys to the same tonic maintaining all the different intervals that take place during modulation.

Modulation in Indian and Western Music

Describing the use of modulation in Western music and Indian music Roger Ashton says, 'Modulation is the process of altering the frame of reference of a melody from one pitch to another, involving thus a change in the position of the tonic, primarily for perspective. Consecutive changes in the frame of reference and thereby very often of the tonic can be either transitional or revolutionary. This contributes to the perspective of prospective and retrospective revaluation, the perspective of contrasting separate and consecutive pictures. Indian music aims not at perspective but at harmonic rediscovery. In a transitional change we take a part of a scale and treat it as a different part of another scale. Modern classical music has brought revolutionary change in which there is no common relationship between the former and latter parts of the transition of the tonic'.⁹

Now we have to investigate the process of modulation which was in use in ancient times and the instruments that were employed in playing the music. In Western music instruments like Piano, Organ etc., maintain the standard pitches and they are used as the basis of key signatures.

We understand that certain types of stringed instruments called *Yāl* were used in musical performances to project forth the different modes in the process of modulation,

irēl toṭutta semmurāik kēlviyīn

*Orēl pālai niruttal Vēṇṭi*¹⁰ :

This means that an instrument with two series of seven strings in a well arranged manner was used to bring out the modulation of seven major modes.

The two series of strings were like this :

Sa ri, ga ma pa da ni

Sa ri ga ma pa da ni

covering a range of two octaves. This enabled the instrumentalist to modulate on the different keys. We can infer that this instrumental technique was actually treated as the foundation of all the theory of music and was referred to by musicians and theorists for all their musical problems. A corresponding phenomenon appears in the history of Greek music also, which gives us much hopes to get some clarification on the music of antiquity. A civilisation that used stringed instruments for calculation of notes and their pitches must have been certainly endowed with advanced knowledge both in theory and practice.

William Smoldon says, 'It is clear that in a primitive and purely melodic art, singers will continue to sing for quite a long time without troubling their heads as to whys and wherefores, after the manner of the whistling street boy. Having learned a melody, their only concern would be to render it at a pitch which suited their voice range. But when an instrumentalist undertakes to follow that melody then a welter of problems immediately arises. He has to know the pitches of the notes that he is called on to produce, and what his fingers must do in the circumstances ; he tends to note the patterns of the intervals and altogether becomes a theorist perforce. It is not surprising that the Greeks solved most of their musical problems by reference to instrumental strings. For this purpose the Kithara was to them what the key-board is to the modern musician. Several of the names given to the tones of the 'Greater perfect system', a theoretical 'scale' which covered the range of two octaves from A to a, were clearly derived from Kithara technique.'¹¹

Cemmurāikkēlvi

From the above version, the term 'Greater perfect system' seems to be the equivalent of the term *Cemmurāikkēlvi*. The two octave range of C to c' or A to a' or any other key denotes that there have been different types of tuning of different modes on the stringed instrument of *yāl*. Any of the major modes was taken as the basic mode and then the modulation was effected with the intervals of that mode. *Greek Tono*

may be a good example for this practice. In Tamil Music the four major modes were said to be *Kuṛiñci Yāl*, *Maruta Yāl*, *Neital Yāl* and *Pālai Yāl*. The derivations out of these four major modes were innumerable. The four types of major modes and their modulations were more concerned with the practice of enharmonic or quarter tone music, whereas the *Āyappālai* system was concerned only with the dia-tonic scale and the semi-tonal music.

In the following lines *Iḷaṅkō Aṭikaḷ*, the author of *Cilappatikāram*, describes how the two series of S,R,G,M,P,D,N were changed into another series, a new practice which was questioned by elders:

‘*Vanmaiyr kiṭanta tāra pākamum*
meṇmaiyr kiṭanta kuraliṇ pākamum
meykkiḷai narampiṛ kaikkīḷai koḷḷak
Kaikkīḷai Oḷinta pākamum porputait
taḷarāt tāram viḷarikkittuk
kiḷai valip paṭṭaṇa lāṅkē Kīlaiyum
taṇ kiḷai aḷivukaṇ tavaḷ vayir cēra
yēṇai makaḷiruṇ kiḷai vaḷic cēra
mēla tuḷaiyili kīlatu kaikkīḷai
vampuru marapiṛ cem pālai yāyatu’.¹²

In the series of S R G M P D N — (C D E F G A B) the top note is Ni (B) (*Vanmaiyr kiṭanta tāra pākam.*) *Sa*, (c) is the bottom note—(*meṇmaiyr Kiṭanta Kuraliṇ pākamum*’). The terms *valivu*, *melivu*, *camuṇ* represent the higher, lower and middle octaves. The B has been changed into E in the higher octave and consequently the lower C has become F. By this change, the B in the higher octave becomes E and the rest of the notes become their 5th and the bottom C becomes F as given below :

S R G M P D N becomes

M P D N S R G

From the description given in *Cilappatikāram*, we infer that it was not a modulation but a higher tuning. To make this point clear *Iḷaṅkō Aṭikaḷ* explains that the highest string B gave her place to her fifth below i.e., E and A to her fifth below i.e. D, likewise each note merged into the form of her fifth. He also refers to the subtle difference that took place between the notes while this higher tuning was effected. He described the notes as maidens. In the new tuning the upper strings start from F, G and end with E (*mēlatu uḷai iḷi Kīlatu kaikkīḷai*). This

might be that the instrument was tuned on its vertical axis so that the bottom strings were higher (in relation to the ground) than the top strings. The new series of sevens cover the three octaves *Valivu*, *Melivu*, *Camam* i.e., higher, lower and middle octaves in this way :—

MPDN / SRGMPDN / SRG

The fourteen notes were thus distributed between the three octaves. It is surprising that South Indian Music adopts this same pattern of two octave range even today. It is also interesting to note that the other style of 2 sevens i.e., SRGMPDN. SRGMPDN is adopted by North Indian musicians upto this day. Their *kya* singing is mostly confined to this range of 2 octaves while the South Indian compositions are confined more to the series starting from F below and ending with E in the higher octave.

A beautiful description has been given in Greek Musical system regarding this two octave system.

‘The complete tonal system (called the greater perfect system), used for theoretical purposes, consists of two additional tetrachords placed conjunctly above and below the principal octave plus one added tone to complete a two-octave span.

The Greater Perfect System



Tetrachord : “extra” “disjunct” “middle” “highest”

The Greek name of the fourth tetrachord (hypaton “of the highest”) may call attention to the position assumed by the Kithara in playing the tones of the system ; presumably the instrument was tuned on its vertical axis so that the bottom strings were higher (in relation to the ground) than the top strings¹³.

The explanation about the tuning of the bottom strings on the top and higher strings in the lower part strengthens the term ‘*mēlatu ulai ilī kīlatu kaikkilai*’ i.e. the bottom strings F and G were on the upper side and higher octave E was on the lower part. Likewise the version that ‘*vampuru marapir cempālai yāyatu*’ gets a very apt explanation in the Greek musical system.

‘It must also be mentioned that even in Aristoxeno’s time a “new tuning” was in vogue, involving a central range of f-F, which bedevilled all the species mentioned. The *status quo* was eventually restored. But this concerns only those readers who propose to proceed further into the subject in more learned tones’¹⁴. It seems that the octave species mentioned here is not different from the various *pālais* and their derivations of ancient Tamil Music.

This arrangement of strings from f-E in a two series of sevens is well described in *Cilappatikāram* as an unerring tradition.

Pīlaiyā marapiṇ īrēl kōvaiyai
*Uḷai mutar Kaikkīlai iṟuvāyk kaṭṭi*¹⁵

Tirikōṇpālai (Chromatic Genus).

Among the four *pālai* systems namely *āyam*, *caturam*, *tirikōṇam* and *vaṭṭam*, we do not know which name represents the chromatic genus of scales. From the ragas of *āyappālai* it could be easily assumed that it belonged to the diatonic and semitonal music. Likewise there are ample evidences that the *vaṭṭappālai* system represented the quarter-tone music i.e., the 24 *srutis* of an octave. The term *tirikōṇam* could be the equivalent of the chromatic genus—the employment of semi-tones successively.

The history of music shows that there was eternal quarrel and struggle between these different genera—as it was called in Greek music. The chromatic nature of scales is a topic of great controversy even today. The famous *Mēla* Scheme of *Vēṅkaṭamaki* was born of this chromatic Genus. Forty *Mēlas* out of the 72 scales contain this chromatic element. Starting with the 1st *Mēla* which takes the following notes—C Db Ebb F G Ab Bbb, the *Mēla* system advocates this chromatic order fully in forty scales excepting the thirty-two scales which are of diatonic order. The confrontation of the diatonic and the chromatic order of notes seems to be eternal. Western Composers also express the inevitability of this state of confrontation.

‘At the beginning of the century composers like Reger, Mahler and Stravinsky wrote in our idiom which went very far in the elaboration of harmony and, while adhering to the basically diatonic construction of tonal harmony, included in their vocabulary more and more chords of a Chromatic character or chordal combinations of intervals not primarily connected with diatonic harmony (intervals of the whole tone scale, chords built on fourths, combinations of tritone with other intervals etc.). Some of the harmonies used (especially passing chords, vast prolongations) are of a nature only loosely connected with the idea of diatonic harmony. Schönberg, feeling that here the limits of tonal harmonic analysis were reached, started calling certain types of chords roving

harmonies. He saw in these novel chordal phenomena, quite rightly the source of astonishing new developments and, at the same time the danger of over-development and of obscuring the basic cadential structure. Wagner had already seen this danger and after *Tristan and Isolde* largely withdrew from the advanced position he had established. Some of these neo-harmonic happenings in the works of Reger, Straus and Mahler met with very severe censure from the more conservative contemporary critics ...' ¹⁶

It is true that the chromatic nature of notes add beauty and charm to the melodic structure. In North Indian Music this chromatic practice seems to be plentiful where the notes like Db D, Eb E etc. are used alternatively in a skilful way avoiding too much of successive chromatic notes which certainly will spoil the beauty of the ragas. As felt by Western Composers that chromatic elements while opening a much wider horizon for the development of musical expressions at the same time pose a danger to obscure the natural beauty. In the present Carnatic Music, appearance of a note is called as *Bhashanga* meaning the presence of a strange element. A very good example to indicate the wide gap between theory and music of Carnatic Music is that while it takes note of the presence of a single note as *anyā* (foreign) but it could allow successive chromatic notes in the order of *Mēlas*.

In Tamil music the usage of two chromatic notes is shown in the 7th mode of *Mērcempālai*. The scale is constructed with the following notes : C Db Eb F F[#] Ab Bb. This scale seems to be the origin of all chromatic elements. The usage of two *Madhyams* F and F[#] gives inexplicable beauty to the ragas. This scale was taken on one of the main four modes of the enharmonic system of Tamil music. This was called *Pālai yāl*.

In the chromatic order it is said that twelve modes could be created by starting the scales from the seven major tones (white keys of the Piano) as well as from the five minor keys (black keys of the piano). These twelve scales are spoken as *Paṇṇiru Pālai* in Tamil music. *Swami Vipulanandar*, the author of *Yāl Nūl*, who did extensive research on the *Sruti Vīṇ* was of the opinion that the forty *mēlas* of *Vēṅkaṭamaki* which belong to the chromatic order might have been born out of modulation on black keys. The black keys were called as *antaram* in Tamil music.

Vēṅkaṭamaki avoided the use of two *madhyamas* (F & F[#]) though he allowed the chromatic usage of other notes like Db Ebb, D[#] E, Ab Bbb, and A, [#]B. The practice of two *madhyams* was in use with earlier generations which is still found in North Indian Music.

Some Scholars are of the opinion that it is incorrect to maintain that South India alone maintained the tradition and North India gave way to outward influences. Mr Herald Powers while dealing with this aspect says, 'The views of Alain Danielou, a French Sanskrit Scholar who has devoted a large part of his life to the study of North Indian Music, are worth quoting on this point: 'It is a common saying in South India that Southern music represents the more ancient school while Northern music has evolved under outside influence. Except on very minor points, this opinion does not, however, agree with the facts. South Indian Music was subjected to systematic reforms, one of the main reformers being *Vēṅkaṭamaki* in the seventeenth century. North Indian classical music, on the other hand, though it lent itself easily to temporary fashions, did not attempt to systematize them and seems to have remained very much what it was in spite of changes.'

Adequate proof could be given in support of Alain Danielou's opinion that North Indian Music has its rightful share in the inheritance. For instance there are many ragas and raga names in Hindustani music corresponding to earlier system of music. Some of the raga names are : *Pancham, Gandaram, Megarag-Megaranji, Danasee-Dhanassari, Kuzzari-Guggari, Malahari-Malhar, Koushikam, Bhairavam, Nata* etc. The ragas of two *Madhyams* F & F[#] were in practice with earlier music. We find beautiful ragas of this category in Hindustani music, examples are ragas *Kedar, Behag, Lalat* etc. The *Mēlā* system of *Vēṅkaṭamaki* eliminated these ragas of two *madhyams* and hence they were believed to be borrowed from Hindustani Music, by the later generations. *Vēṅkaṭamaki's Sutta Mēlā* with scales C Db Ebb F G Ab Bbb also had caused much confusions in the Carnatic system, whereas the North Indian music maintains the C major as its *Sutta* scale. But it is a fact that expert musicians never took notice of the theory which departed widely from practice but continued to adhere to the traditions handed down by their masters. Another similarity between earlier Tamil music and North Indian Music was that both allotted different ragas to different times of the day. This practice of singing ragas suited to morning, evening etc., is still in vogue in Hindustani music, but Carnatic Music has given up the practice.

Some of the popular ragas belonging to chromatic order are :—

1. *Nāṭṭai*—with scales C Eb E F G Bb B.
2. *Varāli* „ C Db Ebb F[#] G Ab B . .
3. *Byag*— C E F G B C (Ascent)
C B Bb A G F[#] F E (Descent)
D C
4. *Hamīr kalyāṇi* — C D C F E G F[#] A G C (Ascent)
C B A G F[#] E F E D C (Descent)

Vaṭṭappālai (Enharmonic Genus.)

Vaṭṭappālai system of Tamil music represents the quartertone music. Here instruments like harmonium and Piano find their limitations. This enharmonic element seems to defy not only notation but also any sort of description and analysis. This system definitely shows that, it is not governed by either the diatonic or chromatic order. It is only in Indian Music, specially South Indian Music we find this quarter-tone element abounding.

Mr. Herald Powers says, 'North Indian ragas are largely dependent for their differing characters on numerous varieties of steady, fixed pitches, on niceties of intonation (or at least they can be described in such terms). These are difficult enough, no doubt, but at least they are susceptible to precise measurement. In the Southern style, on the other hand, the significant dynamic and agogic subtleties, the shakes, slides, and other 'ornaments' almost defy notation and description. Individual character in a Southern raga depends on phrases, on particular ways of coloring groups on melodic shape. Exact pitch is in most cases somewhat less important, often variable within certain limits and sometimes incommensurable.'¹⁸

Caṅkita Ratnākara of *Cāraṅkadēvā* of the 12th century A.D. is a well known work on the 22 *srutis* of an octave. But researches by scholars on this work have met with confusion and controversy. It is almost futile to attempt to investigate the *Sruti* aspect. Another difficulty in deciding the nature of *Srutis* (quarter-tones) is that no uniform conclusion could be arrived at regarding the fundamental scale. Pandit V. N. Bhattachande who has written valuable commentaries on later works expresses this difficulty in defining the terms *Sruti* etc.

'I may mention here that there is a great difference of opinion among our modern scholars themselves as to the question whether or not the shruti was a fixed unit ; some scholars say it was, others deny that. Needless to say, the definition of Shuddha scale hinges on the solution of this question. We all know that the ragas of Ratnakara are defined in terms of the Murchhanas and Jatis, and these would remain indefinite so long as the Shuddha scale remains unsatisfactory and indefinite. So that, until there is a consensus of opinion as to the right value of a Shruti and until it becomes possible to determine the Shuddha scale of Natya Shashtra and Ratnakara, the two works are bound to remain sealed books'.¹⁹

Vaṭṭappālai system of Tamil Music deals with this highly complicated question of *Sruti* or quarter-tone music. In the epic of *Cilappatikāram* there are many references to this highly evolved system of music. The notes are given in a circular form with the 12 astronomical names with specific allotment of houses.

Vaṭṭa menpatu Vakukkuṇ kālai
*Orēl toṭutta maṇṭala mākuṁ*²⁰

It means the circle of 12 compartments is allotted to the seven notes.

*Cāṇaḷavu Koṇṭa toru vaṭṭan taṇmaṭtu
pēṇi iru nālu perunticaik—kōṇat
tiru kayiru mēlōṭṭi oṇpāṇu mūṇṇum
varu muraiyē maṇṭalattai vai*²¹

The circle should be of a diameter of 10" and it should be first divided into four sections by two lines east to west and north to south. Then they should be further divided into 12 equal compartments (triangles). The 12 *rāci* (zodiac) names are given to the twelve compartments starting from the top right and going clockwise.

*etirumirāci valamiṭa māka
etirā viṭa mīṇa māka — mutirāta
īrāri rācikaḷai iṭṭataive nōkkavē
ērārnta maṇṭalamen reṇ.*²²

The above *Cūttiram* explains how the 12 *rāci* names should be attributed to the respective houses. Further the position of seven notes is specified in another *Cūttiram*.

*‘Ettumiṭapa malavanuṭaṇ cīyam
kōṭṭaṇuk kumpamoṭu mīṇamivai—pārttuk
kuraṇ mutar rāra miruvāyk kiṭanta
niralēlum cempālai nēr.’*²³

These seven notes appear on the following seven houses of the *rāci maṇṭalam* :— *Ṭapam*, *Kaṛkaṭakam*, *Cimmaṇ*, *Tulām*, *Taṇucu*, *Kumpam* and *Mīṇam*.

Another *Cūttiram* gives a second series of notes represented by seven other houses as follows :—*Tulām*, *Taṇucu*, *Kumpam*, *Mīṇam*, *Ṭapam*, *Kaṭakam*, *Cimmaṇ*.

After settling the positions of the notes, the *māttirai* or *alaku* for each note is specified.

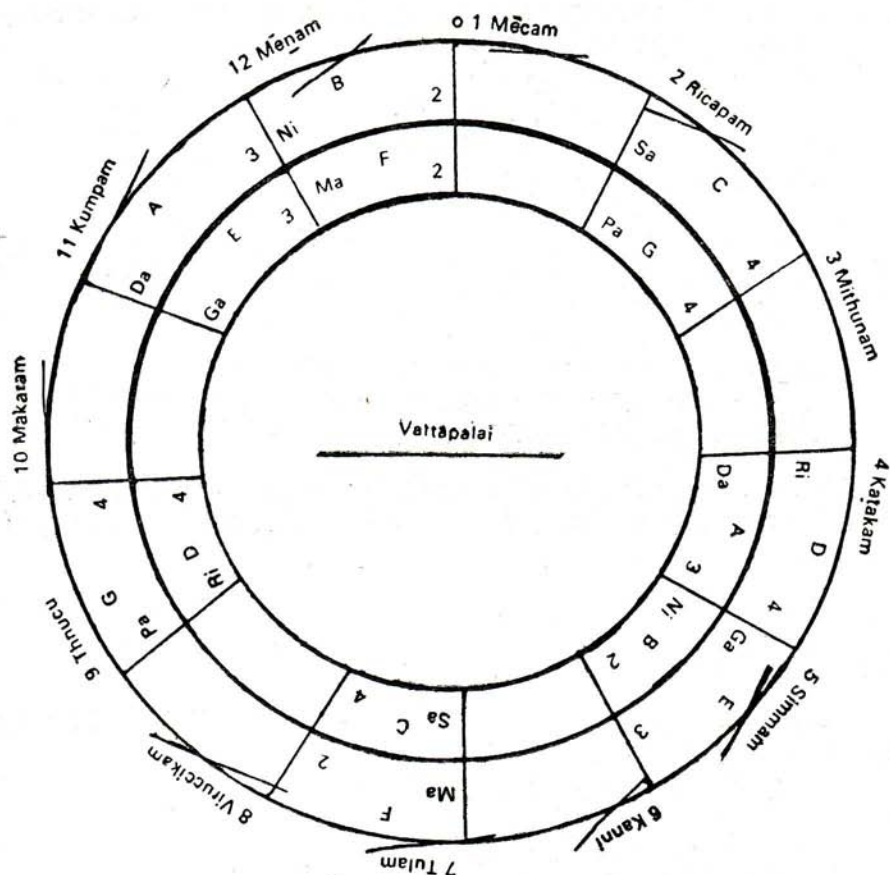
*‘Kural tutta nāṅku kiḷai mūṇṇiraṇṭām
kuṛaiyā vulai iḷi nāṅku—viraiyā
viḷari yēṇiṇ mūṇṇi raṇṭu tārameṇac coṇṇār
kaḷari cēr kaṇṇuṇṇavar’.*²⁴

According to the *Cūttiram* the *māttirai* (*Sruti*) given to each note is as follows :—

<i>Kural</i> (c), <i>Tuttam</i> (D)	— four <i>māttirai</i> each.
<i>Kaikkīlai</i> (E)	— Three <i>māttirais</i> .
<i>Uḷai</i> (F)	— Two <i>māttirais</i> .
<i>Ḳi</i> (G)	— Four <i>māttirais</i> .
<i>Viḷari</i> (A)	— Three <i>māttirais</i> .
<i>Tāram</i> (B)	— Two <i>māttirais</i> .

Sruti or *māttirai* is a fraction of a note. We may safely assert that this denotes the quarter-tone measure.

In accordance with the above *Cūttirams* and their annotations, we may draw the following circle with twelve compartments for the twelve *rācis*, starting with *Mēṣam* and ending with *Mīṇam*. Within these twelve compartments the two series of seven notes are arranged according to the formula prescribed. The measurement of *alaku*s are also shown in the picture.



Of these, *Kural* has 4 *alaku*s, *tuttam* 4, *kaikkiḷai* 3, *Uḷai* 2, *iḷi* 4, *Viḷari* 3 and *tāram* 2—in all there are 22 *alaku*s. This version is the famous *Dua vimsathi sruti* of *Cāraṅka Dēva*. *Tanjāvūr Abraham Paṇṭitar* has done pioneering work on studies of Tamil Music. He says in his *Karuṇā-mirta Sākaram* that the 22 *srutis* of an octave was a misconception. The *srutis* must be of equal intervals and the octave must have 24 *alaku*s in toto. The 3 *māttirais* allotted to *kaikkiḷai* (E) and *Viḷari* (A) was a practice of singing one *māttirai* less— thus making them a quarter-tone

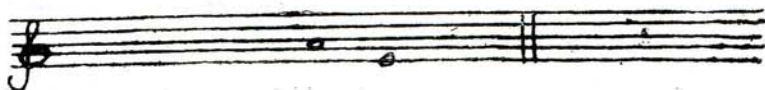
music and that this was in common use, taking 2 notes of one and fifth relationship, the *Shadjam-pancham bhava*—and sing them one *alaku* higher or lower, thus adding immeasurable beauty to the melody. The tetrachord system was of much use in this practice. He establishes that the fundamental scale was C major only and not the scale with 2 flats—The popular misconception of 22 *srutis* was the result of an incorrect understanding of the mention of 3 *alakus* to ga and d (E & A). The calculation of fives also proves this fact, the cycle of fifths puts the B in the house of *Kaṇṇi* instead of *Cimmam*. The ancients purposefully made such riddles just to make the science a hidden treasure (*Kalai malaivu*). The structure of South Indian Ragas also confirms this practice of singing a note with one *alaku* lower or higher to the standard pitch of diatonic order.

Quarter-tone Music and Vaṭṭappālai

It is very interesting to note that Greek Music also speaks about the quarter-tone music in the same way. There also we find the confusion of taking the Dorian mode as the fundamental one. This must have been caused by notes appearing with three *alakus* etc.

Greek music advocates the three genera namely dia-tonic genus, chromatic genus and enharmonic genus. These systems have been well explained in the following manner :

‘ The interval that the Greeks thought of as being of basic importance was the perfect fourth. Using modern staff notation we may safely express it thus,



for it maintained itself firmly among other less fixed relationships. Two inner notes were added, completing the so-called tetrachord, and it was on this pattern of four notes that the Greeks based their theory. As we have seen, the two limiting notes were fixed ones, but what happened between them was another matter altogether. Let us consider the octave (made up of two disjunct perfect fourths) which the Greeks thought of as roughly the vocal range, C to E.



One way of filling in the intermediate notes, which were called significantly enough "moving tones", may be approximately expressed thus, in double tetrachord form—



This particular treatment of a tetrachord was termed the diatonic genus.

'In the fourth century writings of Aristoxenos (when first the genera were analysed) two others were recognised. These altered the "moving tones" in other ways. The first can be approximately rendered thus :



This was called the chromatic genus.

The last arrangement involved divisions of the semi-tone intervals which are difficult both to appreciate and notate :



This was called the enharmonic genus. The diatone gap (approximately law-fah) was as characteristic as the quarter tones²⁵.

It is said that the enharmonic pattern was given up even by Greeks themselves as early as A.D.100.

The Greeks themselves in their later Hellenistic and Roman periods gave up the enharmonic genus with its extremely minute intervals.

Plutarch (A.D.100) writes, 'of the three genera into which the musical scale's divided . . . one only was cultivated by the ancients. In their treatises we find no direction given on the use of the diatonic genus or the chromatic, but of the enharmonic alone'.

Plutarch adds: 'Our contemporaries (A.D.100) have thoroughly neglected the finest genus to which the ancients devoted all their eagerness. Most of them have lost the discernment of enharmonic intervals'²⁶.

Tamil music has preserved all the three systems and also one more system of Micro-tonal music.

Micro-tonal System (Caturappālai) :

This system starts with the four major modes *nār perum paṇ* and their multifarious derivations of not only quarter-tone but of fractions of the same. In this system we find notes taking their roots from other compartments of notes.

In this very limited paper it has been in a way possible to establish that the Ancient Tamil Music was very highly evolved and grown to perfection even in the early centuries of Christian era, which means the Tamils must have developed their science of music several hundreds of years earlier. What strikes one with admiration beyond words is the similarity in many respects between Tamil Music and Greek Music evidently because of close commercial and political contact between Tamil Kingdoms and the Greek Country in those ancient times.

FOOTNOTES

¹ *Cilappatikāram, Āycciyar kuravai*: Commentary, Ed. by U. V. Swaminatha Iyer, Madras, 1968, p. 449.

² *Ibid.*, *Araṅk*, l. 63.

³ REVESZ, G.: Introduction to the Psychology of Music, Longmans Green & Co., London, 1953., p. 24.

⁴ *Cilappatikāram, Vēṇir*, l. 36

⁵ BOYDEN, DAVID D.: An Introduction to Music, Alfred A. Knopf, N.Y., 1963, p. 40.

⁶ *Ibid.*, p. 35.

⁷ *Ibid.*, p. 38.

⁸ *Ibid.*, p. 38.

⁹ ASHTON, ROGER: Music, East and West, Indian Council for Cultural Relations, 1966, p. 49.

¹⁰ *Cilappatikāram, Araṅk*, ll. 70-71.

¹¹ SMOLDON, WILLIAM L.: A History of Music, Herbert Jenkins, London, 1965, p. 25.

¹² *Cilappatikāram, Araṅk*, ll. 72-81.

¹³ ULRICH, HOMER and PISK, PAULI A.; A History of Music and Music style, Rupert Hart, London, 1963, p. 18.

¹⁴ SMOLDON, WILLIAM, C.: Op. cit., p. 27.

¹⁵ *Cilappatikāram, Vēṇir*: ll. 31-32.

¹⁶ WALTER and GOEHR, ALEXANDER: European Music in the 20th century, Routledge and Kegan Paul, London, 1957, pp. 79-80.

¹⁷ POWERS, HAROLD S.: The Background of South Indian Raga System, Princeton University, 1958, p. 4.

¹⁸ *Ibid.*, p. 3.

¹⁹ Journal of Indian Musicological Society, Vol. 3, No. 2, April-June, 1972, Baroda, p. 9.

²⁰ *Cilappatikārm, Āycciyar*: Comm., pp. 448-449.

²¹ *Ibid.*, p. 449.

²² *Ibid.*, p. 449.

²³ *Ibid.*, p. 449.

²⁴ *Ibid.*, p. 449.

²⁵ SMOLDON, WILLIAM: Op. cit., pp. 73-74.

²⁶ STEVENSON, R.: Music before the Classical Era, Macmillan, London, 1958, p. 10.